

The University of Chicago

A CASE HISTORY
OF THE N.R.A. EPISODE
THE FERTILIZER INDUSTRY

A PART OF A DISSERTATION SUBMITTED TO
THE FACULTY OF THE DIVISION OF THE
SOCIAL SCIENCES IN CANDIDACY FOR
THE DEGREE OF DOCTOR OF PHILOSOPHY

DEPARTMENT OF ECONOMICS

1938

By

AL F. O'DONNELL

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NOTE

The following pages, constituting the essential portion of the dissertation, contain some footnote references to the complete dissertation, which is in the University of Chicago Libraries.



CHAPTER IX

GENERAL ANALYSIS

In the two previous chapters, each of the specific provisions of the fertilizer industry code have been reviewed, analyzed and appraised. A determination of how the various interested parties fared under the code will be undertaken in this chapter. The available data with reference to employment and wages, fertilizer prices and industry profits will be analyzed and critically appraised, and the part which the NRA fertilizer code played will be isolated wherever practicable. In other words, the position of labor, consumer and the industry will be examined for the periods before, during and after the code, and insofar as possible, a judgment will be attempted with reference to not only the short-run but also the long-run effects of the fertilizer industry code upon these three classifications of interested parties.

Status of Labor

One of the primary purposes of the NRA was to increase the purchasing power of the workers of the country not only by spreading employment through the inclusion of maximum hours provisions in the codes but also by maintaining the purchasing power of the workers engaged in the industry prior to the code through provisions which imposed minimum wage rates. This section will examine the available data as to such employment conditions during the NRA episode.

In interpreting the available data on employment, pay rolls, man-hours and wage-rates in the fertilizer industry during

the codal period, it must be constantly borne in mind that what happened to labor during the period in which the code was in operation cannot be attributed solely to the code itself. Various other factors such as the fluctuating demand for fertilizer have a marked effect upon employment conditions, wage rates and pay rolls.

In determining to what extent the objectives of National Industrial Recovery Act in spreading employment and increasing purchasing power were accomplished in the fertilizer industry during the period in which the code was in operation, as well as afterwards, it is necessary to use the labor data provided by the Bureau of Labor Statistics of the U. S. Department of Labor.¹

The BLS obtains, from a cooperating list of fertilizer companies, monthly statistics on the number of employees, average hours worked per week, total man-hours, average weekly earnings and average hourly earnings. These data are collected for the pay roll period which ends nearest to the fifteenth of the month.

The list of reporting companies differs from month to month. The BLS method of measuring what happened to labor in the fertilizer industry is based upon the comparison of the percentage change from one month to another of identical concerns reporting in two consecutive months and assuming that the percentage change for the entire industry is the same as the sample for the month under consideration.

This method requires the use of correct basic data for the entire industry as a starting point upon which to figure the chain relatives upon which the BLS bases its calculations. This base is afforded by the Census of Manufactures, which in census

¹Heresafter referred to as BLS.

years, collects labor data for the fertilizer industry including monthly figures on the number of wage earners employed and wages.¹

Since the list of companies reporting to the BLS changes from month to month, the figures shown in the respective samples for the same months of consecutive years are not and were never intended to be comparable. However, Table 75, which does not take these qualifications of the statistics into consideration, was presented to the Senate Finance Committee by an official of The National Fertilizer Association in testifying as to the beneficial effects of the fertilizer industry code.

TABLE 75

NUMBER OF EMPLOYEES IN THE FERTILIZER INDUSTRY^a
(Based on the Firms which Report Monthly to the BLS)

Month	1933		1934	
	Number of Firms	Employees	Number of Firms	Employees
March.	201	9,078	171	14,769
April.	199	15,621	188	18,511
Average	...	12,389	...	16,635

^aTestimony Relating to the Code of Fair Competition for the Fertilizer Industry, op. cit., p. 1749.

The BLS has been compiling labor data for the fertilizer industry since 1923 on the number of employees and pay rolls. The present form of questionnaire, which involves the compilation of man-hours, has only been in use since 1932. This number of man-hours, which includes overtime, is supposed to be the hours actually worked by factory employees during the pay roll period reported and not a compilation made by multiplying the number of employees by the number of hours which the plant operated. The

¹See chap. 11, supra.

number of employees includes workers who worked any part of the period reported and would characteristically indicate a larger number of employees than would be required to perform the work done during the period if all of the employees were on a full-time basis.

In interpreting what happened to labor during a particular period, it is important to understand certain additional facts in connection with these data. Plants are placed on the BLS fertilizer industry list by virtue of the fact that their most important product in dollar value is fertilizer. In reporting employment statistics, however, they include all workers in the plant whether or not they are engaged in the manufacture of fertilizer. The definition of factory employees given in the BLS questionnaire includes all skilled and unskilled workers as well as the workers in production and other departments, including non-production departments such as maintenance, shipping, power plant, etc.

The available labor statistics will be examined from two primary points of view. Insofar as possible, we are interested in ascertaining what happened to labor during the period in which the NRA code was in operation, and secondly, we are interested in ascertaining whether or not the changes which came about during that period were of temporary or more permanent character. Both the annual and monthly data on employment and pay roll statistics, as furnished by the BLS, are helpful in achieving these objectives.

Table 76 presents the annual data. These data are not very conclusive as regards the codal period since statistics for the calendar years 1933 and 1935 are made up, in part, of non-codal periods. In the case of the 1933 figures, the codal period, which amounted to less than two months, constituted a relatively

TABLE 76

EMPLOYMENT AND PAY ROLLS IN THE FERTILIZER INDUSTRY^a
1932-1937

Year	Number Employed ^b (000) (1)	Average Hours Worked ^a per Week (2)	Total Man-Hours per Week ^c (000) (3)	Average Hourly Earnings ^a (Cents) (4)	Weekly Pay Roll ^b (\$000) (5)	Average Weekly Earnings ^a (Dollars) (6)
Monthly Averages						
1932	10.4	44.2	459.7	31.4	138.8	13.19
1933	13.1	41.6	545.0	29.0	140.1	11.79
1934	17.1	33.3	569.4	36.8	206.0	12.32
1935	16.3	34.1	555.8	35.4	219.8	12.09
1936	15.2	39.5	600.4	35.9	229.6	14.20
1937	17.2	41.5	713.8	40.1	300.7	16.79
Per Cent Increase or Decrease (-)						
1933	26.0	- 5.9	18.6	- 7.6	0.9	-10.6
1934	30.5	-20.0	4.5	26.9	47.0	4.5
1935	- 4.7	2.4	- 2.4	- 3.8	6.7	- 1.9
1936	- 6.8	15.8	8.0	1.4	4.5	17.5
1937	13.2	5.1	18.9	11.7	31.0	18.2
Spring Seasons ^d						
1932	14.6	42.5	620.5	30.8	194.4	12.94
1933	15.0	44.5	667.5	24.4	148.5	10.91
1934	22.9	34.0	778.6	34.5	258.6	11.57
1935	22.2	33.7	748.1	33.5	276.2	11.12
1936	18.7	38.2	714.3	33.6	262.4	12.83
1937	21.8	42.8	933.0	35.4	352.4	15.15
Per Cent Increase or Decrease (-)						
1933	2.7	4.7	7.6	-20.8	-23.6	-15.7
1934	52.7	-23.6	16.6	41.4	74.1	10.6
1935	- 3.1	- .9	- 3.9	- 2.9	6.8	- 3.9
1936	-15.8	13.4	- 4.5	.3	- 5.0	15.4
1937	16.6	12.0	30.6	5.4	34.3	18.1

^aMonthly issues of "Employment and Pay Rolls" of the U. S. Department of Labor, Bureau of Labor Statistics.

^bConfidential BLS worksheets. ^cDerived: Col.(1)xCol.(2).

^dMonthly averages of January, February, March and April.

inactive season in the fertilizer industry, whereas the first five months of 1935 which represented the period of codal

operation in that year, included the busiest season of the year.

This table also shows a breakdown of these data for the months of January, February, March and April of each year from 1932 through 1937. By isolating the statistics for these four months, we are able to present an effective comparison of the busiest season of the year for fertilizer manufacturers for one year at the depth of the depression, one year which immediately preceded the President's Reemployment Agreement, two years of codal operation and two years following this period. These data for the busy season are also illuminating because the annual figures which represent unweighted arithmetical averages of monthly data, obscure the fact that in this industry where the minimum monthly average employment in recent years has been less than 40 per cent of the maximum employment, the average wage rates are much higher in the less busy seasons.¹

This is illustrated by the figures for 1932-1937 which show that in the slack month of September the average hourly wage rate was 5 per cent above the annual average whereas for the more active business month of March the rate was 14 per cent below the annual average.

Spreading of Employment

Whatever the motivating cause, the spreading of employment is, of course, measured by the relative number of employees in two periods being compared. Employment was spread in each year from 1932 to 1934, but fell off somewhat in 1935 and 1936, and then reached its peak since the depression period in 1937.

The statistics reveal that the work was spread during the codal period. Whereas in 1932, the average worker worked 44.2

¹See Table 4, chap. 11, supra.

hours per week, this figure had dropped to 33.3 hours per week during 1934, the first full calendar year of codal operation. Achieved effects of the code were in large measure maintained during 1935 because the busy season had been completed by the time the codes were invalidated. The average man-hours per week rapidly expanded in 1936 and again in 1937 when they amounted to 41.5 hours per week, which is almost exactly the same as in 1933. Of course, the 1933 figure may be in some measure affected by the President's Reemployment Agreement and the fact that the code did operate for almost two months at the end of the year even though it was not a busy season.

Table 76 also shows that in the spring season of 1934, the first busy season under the code, the monthly average number of employees increased by 53 per cent over the corresponding period of 1933, while the average man-hours per week fell 24 per cent, with the net result that the average of the total man-hours per week increased 17 per cent. This increase of 53 per cent in the spring season may be compared with the increase of only 31 per cent for the full year of 1934 over the corresponding period of 1933, the difference resulting from a change from a non-codal to a codal period for the spring season and the change from the part codal year of 1933 to the full codal year of 1934. Conversely, the decrease in the number of men employed in the spring season of 1935 as compared with the corresponding period of 1934 was but 3 per cent, reflecting the change in two seasons of codal operation, whereas for the calendar year 1935, the decrease in employment was 5 per cent, thus reflecting the relatively greater decrease in 1935 following the invalidation of the code.

Although the above analysis indicates that employment in the fertilizer industry during the period of codal operation was

spread, it is interesting to examine the geographical variation in the effect of the maximum hours of labor as set by the code which is hidden because of the use of averages.

The National Fertilizer Association questionnaire showed that in the spring season of 1933 the average hours worked per week in the superphosphate departments in the United States was 57 with highs of 72 hours in Louisiana and Illinois, while New Jersey showed a low of 50 hours and Indiana 51 hours. Average hours worked per week in dry mixing departments during the same period was 55 with highs of 61 in Mississippi and 60 in New York compared with lows of 51 in Massachusetts and Texas.¹

Since the general maximum hours provision contained in the code limited the work week to 40 hours, the work was probably most effectively spread in the Southern states even though the averaging provisions of the code were such that the work week during the busy season may still have been substantially in excess of 40 hours per week.

While the prior discussion has been confined to what happened to employment in the fertilizer industry, principally during the period of the NRA episode, it is also of interest to compare the changes in employment in the fertilizer industry during this interval with the changes in all manufacturing industries and in particular with the chemicals and allied products industries, of which the fertilizer industry is a part, as shown in Table 77. Starting from the 1923-25 level of 100, the index of employment for the fertilizer industry continuously ran substantially higher than that for either all manufacturing industries or for chemicals and allied products other than petroleum refining. In 1931 and 1932, employment in the fertilizer industry

¹See Table 13, chap. 11, supra.

TABLE 77

EMPLOYMENT AND PAY ROLL INDICES^a

1923-1937

(3-year average 1923-25 = 100)

All Manufacturing Industries			Chemicals and Allied Products Other Than Petroleum Refining		Fertilizer	
Index	Per Cent Increase or Decrease (-) from Previous Year		Index	Per Cent Increase or Decrease (-) from Previous Year	Index	Per Cent Increase or Decrease (-) from Previous Year
Employment Indices						
1923	104.1	....	102.9	....	100.5	....
1924	96.4	- 7.4	96.9	- 5.8	93.1	- 7.4
1925	99.5	3.2	100.2	3.4	106.4	14.3
1926	101.3	1.8	105.4	5.2	112.8	6.0
1927	98.9	- 2.4	102.8	- 2.5	100.8	-10.6
1928	98.7	- 0.2	102.5	- 0.3	107.6	6.7
1929	104.7	6.1	113.6	10.8	113.4	5.4
1930	91.3	-12.8	105.6	- 7.1	111.0	- 2.1
1931	77.3	-15.3	92.7	-12.2	78.8	-29.0
1932	65.5	-15.3	82.2	-11.3	56.5	-28.3
1933	72.0	9.9	95.4	16.1	70.7	25.1
1934	82.5	14.6	108.8	14.0	92.4	30.7
1935	86.0	4.2	110.7	1.7	88.3	- 4.4
1936	91.9	6.9	113.8	2.8	82.1	- 7.0
1937	99.3	8.1	123.8	8.8	93.0	13.3
Pay Roll Indices						
1923	103.3	....	102.1	....	99.1	....
1924	96.0	- 7.1	97.0	- 5.0	93.6	- 5.6
1925	100.7	4.9	100.9	4.0	107.3	14.6
1926	103.7	3.0	107.4	6.4	118.4	10.3
1927	101.7	- 1.9	106.8	- 0.6	106.9	- 9.7
1928	102.4	0.7	108.0	1.1	109.1	2.1
1929	109.1	6.5	118.4	9.6	108.3	- 0.7
1930	83.5	-18.9	106.6	-10.0	104.2	- 3.8
1931	67.4	-23.9	87.7	-17.7	73.4	- 3.0
1932	46.4	-31.2	66.9	-23.7	43.7	-40.5
1933	49.4	6.5	72.5	8.4	44.0	0.7
1934	62.9	27.3	89.0	22.8	64.8	47.3
1935	71.3	13.4	96.0	8.9	69.1	6.6
1936	82.4	15.6	106.4	9.8	72.2	4.5
1937	98.0	18.9	131.4	23.5	94.6	31.0

^aU. S. Department of Labor, Bureau of Labor Statistics, Employment and Pay Rolls, December, 1937, (Washington: Government Printing Office, 1938), pp. 22 and 31.

dropped off much more sharply than in either of these other two groups. Starting from the very low base of 1932, the index of employment for the fertilizer industry showed a greater percentage increase in each of the years 1933 and 1934 than did the employment index for all manufacturing industries or the employment index for chemicals and allied products other than petroleum refining.

The index of employment for the fertilizer industry declined slightly in each of the years 1935 and 1936, while the indices for the other two groups were advancing slightly, and in 1937, fertilizer employment, reversing the trend of the previous two years, increased substantially while that in the other two groups also advanced but by smaller amounts.

The fertilizer index of employment stood at 93.0 in 1937 as compared with a low of 56.5 in 1932, an increase of 65 per cent, while the index of employment for all manufacturing industries increased 52 per cent, and employment in chemicals and allied products other than petroleum refining increased 51 per cent, showing that fertilizer employment is more susceptible to cyclical changes than the manufacturing industry as a whole.

In the spring season of 1935, the number of hours each man worked per week decreased 1 per cent. In the 1936 spring season, the first busy season following the invalidation of the code, the number of workers decreased 16 per cent while the average man-hours per week increased 13 per cent, whereas in the spring season of 1937, the number employed increased 17 per cent while the average man-hours per week increased 12 per cent.

Table 76 shows that in 1933, the number of employees increased 26 per cent and the man-hours decreased 6 per cent, and that in the spring season, which was before the operation of

either the President's Reemployment Agreement or the fertilizer code's effective date, the number of employees increased 3 per cent and man-hours worked per week increased 5 per cent, as compared with the comparable period in the previous year. Although production increased in each year from 1932 through 1935, it seems clear that the President's Reemployment Agreement and the NRA fertilizer industry code were substantial factors in accomplishing the above-indicated spread of employment.

Spreading of Purchasing Power

Since one of the objectives in the codification of the industry was to increase purchasing power as well as to spread employment, the codes provided for minimum wage rates, which in many instances represented substantial increases over those which had previously prevailed. In the spring season of 1933, which was prior to the President's Reemployment Agreement or the NRA, the hourly wage rate was only 24.4 cents but the increase during the period of the operation of the PRA and of the fertilizer industry code resulted in an annual average of 29.0 cents per hour which was the lowest annual average annual rate during the period for which these data are available.

The increased rate during the early codal period is clearly reflected in the annual figure of 36.8 cents per hour for 1934, the first full calendar year of codal operation, representing a 27 per cent increase over the low level established in 1933. As would be expected, the spring season of 1934 with its hourly wage rate of 34.5 cents represented an even greater percentage increase, namely 41 per cent, over the comparable period of calendar year 1933, than did the statistics for the full year.

The hourly wage rate was relatively well sustained during

1935 and 1936 and increased sharply in 1937 to average 40.1 cents per hour. This is higher than the annual average for any year since 1932 when these statistics first became available and compares with 36.8 cents per hour during the only full calendar year of codal operation, namely 1934.

The spring season of the year when so many extra employees, many of whom are low-paid common laborers, are employed, shows a lower average hourly wage rate than does the annual average. In 1937, the spring season rate stood at 35.4 cents per hour as compared with 34.5 cents per hour during 1934 and 24.4 cents per hour during the busy season of the last pre-codal period.

As the combined result of the changes in the number of employees, hours per week and hourly wage rates, the average weekly pay roll increased steadily from 1932 to 1937. The gain in 1934 over 1933 amounted to 47 per cent and was primarily the result of a 27 per cent increase in the average hourly wage rate as total man-hours increased by but 5 per cent. The gain of 31 per cent in 1937 over 1936 was the result of both a 19 per cent gain in man-hours and a 12 per cent advance in the hourly wage rate.

While these weekly pay roll figures reflect the spreading of purchasing power, it was distributed among a larger number of workers so that the average weekly wage rate did not increase as rapidly as did the weekly pay roll. As has been previously indicated, the spring season of 1933 represented the low point not only of the weekly pay rolls and hourly wage rates, but also of the weekly wage rate which stood at \$10.91 per week as compared with \$12.94 per week in the spring season of 1932. Of course, the annual average rate is considerably higher than these

figures, due to the retention of higher paid workers in the slack season of the year and in 1933 stood at \$11.79 as compared with \$13.19 in 1932.

During 1934, the spring season weekly wage rate was \$11.57 while the annual average weekly wage rate was \$12.32. There was a slight decrease in 1935 followed by increases in 1936 and 1937, both for the spring season weekly wage rate and the annual average wage rates. It was not until the spring season of 1937 that the weekly wage rate surpassed the level achieved in 1932 and stood at a higher level than during any previous year in the period 1932-1937, inclusive.

In considering the increase in wage rates, during the period of codal operation, it was interesting to observe that the minimum rates in the code did not represent the same percentage increase over the previously prevailing wage levels in the various sections of the country as is indicated by the data presented in Table 78.

This table shows that plants situated in the South raised the hourly wage rates of common labor by about 80 per cent as compared with about one-third in the North, two-fifths in the Middle-West and one-tenth on the Pacific Coast.

It is to be noted that in the Southern area, some three-quarters of all fertilizer employees were situated who received slightly over three-fifths of the total of wages in 1933. Table 7 shows that in 1935, there were still three-quarters of all employees located in the Southern area, indicating that there was no movement into the South to take advantage of the lower rates nor was there any movement out of the South to compensate for the smaller wage differential existing after the code. The Southern area showed that where it received 62.7 per cent of wages in 1933,

TABLE 78

HOURLY WAGE RATES OF COMMON LABOR IN THE FERTILIZER INDUSTRY,
BEFORE,^a DURING AND AFTER^b NRA
(A = MANUFACTURING SUPERPHOSPHATE,^c
B = MANUFACTURING DRY MIXED FERTILIZER^d)
(Cents per Hour)

Division	North	South	West	Pacific Coast	United States
Six Months Ended June 30, 1933					
A	25.7	13.9	27.3	....	19.6
B	26.5	13.7	27.0	35.9	16.8
Codal Period					
A	35	25	35	40	....
B	35	25	35	40	....
1936					
	e	e	e	e	29.6
Percentage Increase from Six Months Ending June 30, 1933 to Code Levels					
A	36.2	79.9	28.2	....	....
B	32.1	82.5	29.6	11.4	....

^aNFA Questionnaire.

^bU. S. Department of Commerce, Statistical Abstract of the United States, 1937, (Washington: Government Printing Office, 1938), p. 316.

^cIn the year ended June 30, 1933, this division employed 5.4 per cent of the man-hours and paid 5.3 per cent of the wages in the fertilizer industry.

^dIn the year ended June 30, 1933, this department employed 76.6 per cent of the man-hours and paid 67.8 per cent of the wages in the fertilizer industry.

^eNo breakdown available.

it had 66.1 per cent in 1935. With such a concentration of labor in the South, it appears that the average wage rate for common labor under the code ranged between 25 and 30 cents per hour (the average in pre-codal 1933 was 2.9 cents above the Southern rate of 13.7 cents); and the BLS shows a common labor average wage rate

29.6 cents in 1936, the only subsequent year such information is available.

In spite of the increase in wage rates in the South, as indicated by the experience of the fertilizer industry, it is interesting to observe that there was still some feeling on the part of the administration, that wages in the Old South are still too low. The President of the United States said recently ". . . . the buying power of the people is still so low today that the people cannot purchase the products of industry Most men and women who work for wages in this whole area get wages which are far too low"1

The available statistics which are in terms of averages, indicate that employment was spread and purchasing power increased during the period of codal operation. However, a substantial but indeterminable proportion of these increases was undoubtedly attributable to increased production and other causes, not necessarily related to the administration of the National Industrial Recovery Act so that it is not possible to adequately and satisfactorily relate what took place, with the causes therefor. Unfortunately in this industry, we do not have monthly production figures. We do have figures which purport to represent consumption, the deficiencies of which have been previously indicated.² The production can be approximated by these estimated figures of annual domestic consumption.³

¹Speech in Gainesville, Georgia, on March 23, 1938.

²See chap. iii, supra.

³Exports of superphosphate and mixed fertilizer are relatively small and do not vary sufficiently from year to year enough to upset conclusions derived from such relationships. For the purpose of this analysis domestic consumption will be used synonymously with production.

The figures of consumption, such as they are, indicate that consumption increased 14 per cent in 1934 as compared with 1933, and 12 per cent in 1935 as compared with 1934. Thus in interpreting the statistics to see what happened to labor during the period of codal operation, we must bear in mind that normally increased production would call for increased pay rolls, not necessarily in direct proportion, however, due to the fact that various plants are mechanized to different degrees, that plants are operating at various percentages of their efficient capacity, and that in some plants increased production will be accomplished only in a scale of diminishing returns to effort expended due to their relatively complete utilization of existing capacity.

A comparison of annual changes in production as measured by average total man-hours per week (see Table 76) with corresponding changes in consumption (see Table 27) shows that the former increased more percentagewise than did the latter in 1933, that this situation was reversed in 1934, 1935 and 1936, and that both increased at the same rate in 1937.

On the basis of monthly figures for the years 1932-1937, inclusive, consumption and man-hours move in the same direction although fluctuations in the latter are less violent than in the former. This leads to the conclusion that production, as measured by man-hours, moves in conjunction with consumption although about one-third of the men are retained even during the extremely slack consumption seasons. These men, as has been pointed out, are those receiving higher rates of pay.

We do have available data which throw some light on certain phases of the increase in labor costs during the period of codal operation. The summary survey of cost figures made by The National Fertilizer Association for the NRA, as presented in

Table 79, shows that while labor cost increased 52 per cent from 1933 to 1934, it comprised about 3.9 per cent of the total cost, and 4.4 per cent of the net cash price received by the manufacturer at the plant in 1933, as contrasted with 5.3 per cent of the total cost and 5.0 per cent of the net cash price received by the manufacturer at the plant in 1934. This increase constituted but 14.7 per cent of the 1933 to 1934 increase in the total cost at the plant and 6.8 per cent of the increase in the cash price received by the manufacturer.

TABLE 79

SUMMARY OF MIXED FERTILIZER COSTS IN THE PRINCIPAL FERTILIZER CONSUMING AREAS IN THE UNITED STATES FOR LEADING GRADES^a

Territories Combined	1933		1934		Increase		
	Dol-lars	Per Cent	Dol-lars	Per Cent	Dol-lars	Per Cent	Per-cent-age
Cost at Plant:							
Materials.	9.77	63.0	11.02	62.3	1.25	59.4	13
Bags	.38	5.7	1.33	7.5	.45	20.6	51
Labor: Mixing, shipping, etc. . .	.61	3.9	.93	5.3	.32	14.7	52
Other costs ^b	4.24	27.4	4.40	24.9	.16	7.3	4
Total cost at plant	15.50	100.0	17.68	100.0	2.18	100.0	14
Actual Net Cash (Dealer) Price Received by Manufacturer at Plant.	13.98	.....	18.68	.....	4.70	.....	34
Profit or Loss (-).	- 1.52	.....	1.00	.....	2.52	.....	..

^aBased on the general report issued by The National Fertilizer Association as a result of their cost survey undertaken at the request of NRA so that farmers or their Congressional representatives who complained of prices would have the facts on the cost of production.

^bIncludes tax tags; light, power, fuel; taxes; depreciation on physical property at income tax rates; office, sales, and administrative expenses; bad debts; insurance; etc.

Additional data which cast light upon the whole problem

of the relationship of wages and production is presented in Chapter II, Tables 10, 11 and 12, pages 24, 25 and 26. Unfortunately, the only complete calendar year of codal operation, namely 1934, is not a census year, but the data do show that the wages per ton of fertilizer produced in 1935 were only \$1.70 as contrasted with a low of \$1.40 in calendar year 1933 and a high of \$3.06 in calendar year 1919.

The annual wage per worker as reported to the census in 1935 was \$628, which is the lowest for any census year since 1919 with the exception of calendar year 1933 when the annual wage per worker was \$557. The highest annual wage per worker was in 1919 when it reached \$965 per year although it approached this figure and stood at \$948 per year in 1927. The percentage of wages to the value of product seems to have been relatively constant since 1929 and in the census years, 1929, 1931, 1933, 1935, stood at 7.6, 7.9, 7.7 and 7.8 per cent, respectively, of wages to value of product.

In order to compare the increases and decreases in pay rolls for all manufacturing industries, chemicals and allied products other than petroleum refining, and the fertilizer industry, Table 77 presents the BLS pay roll indices of these three groups. These statistics indicate that during the calendar year 1934, the only full year of codal operation for which statistics are available, the fertilizer industry pay roll index increased 47 per cent as contrasted with 27 per cent for all manufacturing industries and 23 per cent for chemicals and allied products other than petroleum refining.

Although these increases were from varying bases, of which that of the fertilizer index was the lowest, the indications are that the fertilizer industry pay rolls were increased relatively

more than were the pay rolls for each of the other two classifications of industry discussed during the full year of codal operation. In the years 1935 and 1936, pay roll index of the fertilizer industry increased by a smaller percentage than did indices for the other two classifications of industry although in 1937, the increase in the pay roll index for the fertilizer industry again exceeded the increase for the other industry classifications.

The labor provisions of the fertilizer industry code were not all that could have been desired from the point of view of labor. The maximum hours provisions, while not materially different from those of most codes, were higher than the thirty-five-hour maximum which the NRA Labor Advisory Board recommended, and the averaging provisions were sufficiently liberal to nullify to some extent the operation of the general provisions. Furthermore, as pointed out above, this code was one of the few which did not contain provisions for the equitable adjustment of wages above the minimum. Although statistics are not available to determine what happened during the period of codal operation to wages which were above the codal minimum prior to the adoption of the code, some evidence is available to indicate that, in some instances, such wages were reduced to compensate for the shorter hours at the time the code went into effect.¹

From the long range viewpoint, it is interesting to note that while the number employed in the fertilizer industry was almost identical in the year of codal operation, 1934, as in the year 1937, the man-hours per week in 1937 were 41.5, as compared with 33.3 in 1934, thus indicating that the work week had been

¹Al F. O'Donnell, The Fertilizer Industry Study, Work Materials No. 63, Vol. I, (Washington: Department of Commerce, Office of National Recovery Administration, Industries Studies Section, 1936), p. 121.

stretched by about 25 per cent following the invalidation of the code, and indicating that, other things being equal, the effects of the NRA in shortening the work week had, in a substantial measure, been dissipated by 1937. In other words, in 1937, the fertilizer industry was not providing work for as many persons as was the case under similar conditions during the period of codal operation when the NRA fertilizer industry code provisions restricted the maximum number of hours which any worker could work in one week.

On the other hand, the higher wage rates inaugurated during the codal period have not only been maintained but have been gradually increased until by 1937 the average hourly rate stood 9 per cent above the 1934 level.

The Consumer

This section of the analysis will be devoted to an examination of the prices of fertilizer over a period which will include the codal period as well as the time immediately preceding and following that episode. So far as the available data permits, an attempt will be made to explain the causes of the price changes especially those causes related to the NRA fertilizer code.

One of the principal indices for the purpose of studying these price changes is the index of prices paid by farmers for fertilizer, published by the Bureau of Agricultural Economics of the United States Department of Agriculture.¹ This index is based on prices obtained from a dealer questionnaire and is made up of prices which the dealers say they charge farmers. There is, however, evidence which leads one to believe that these are not necessarily the settlement prices which the farmer pays. This is

¹Hereafter referred to as the BAE.

clearly indicated by a pre-codal statement of the chief executive official of The National Fertilizer Association who said:

During the past twelve months fertilizer prices have receded 12.6 per cent. In actual practice mixed fertilizers have receded more than our index number shows for the index is based upon quotations of fourteen of the most used fertilizer analyses and not upon the final settlements.¹

This statement would seem to indicate that the prices upon which the index was based overstated the price actually paid in the pre-codal period by not considering the various discounts which were allowed from these quoted prices. During the codal period, however, the quotations more correctly represent the realized prices because of the open price filing provisions of the code.

It is necessary, therefore, in interpreting the BAE index of what happened to the price paid for fertilizer by the farmer in 1934 as compared to 1933 to make an adjustment to account for the basic difference in the prices upon which the two indices were computed. Fortunately we have excellent data upon which to make this adjustment. In 1934 at the request of the NRA a study was prepared² which gave comparative figures on agents' realized prices in 1934 and 1933 as well as the quoted prices in 1933. These data, which are presented in Table 80, show that while the quoted price in the spring of 1933 averaged \$16.56, the realized price was only \$13.98, indicating a discount of 15.6 per cent.

The BAE index of prices paid by farmers for fertilizer for the years 1929-1937 is presented in Table 81.

¹Charles J. Brand, "The Industry and the Association: An Appraisal." Proceedings of the Seventh Annual Convention of The National Fertilizer Association, (Washington: The National Fertilizer Association, 1931), p. 23.

²Data were received from firms in nine zones operating a total of one hundred plants and producing more than half of the fertilizer produced in those zones and 27 per cent of the United States consumption.

TABLE 80

AGENTS' QUOTED PRICES AND REALIZED PRICES^a
 (AVERAGE OF NINE REPRESENTATIVE GRADES OF MIXED FERTILIZER
 OF THE NINE TERRITORIES FOR WHICH "COST AND SALES
 PRICE DATA" REPORTS WERE ISSUED)
 1933 AND 1934

Territory	Zone	Sub- zone	Price, F.O.B. Producer's Plant		
			Spring 1933		Quoted March 1, 1934 ^c
			Quoted	Actual ^b	
Rhode Island and parts of Massachusetts and New Hampshire . .	1	C	\$24.65	\$24.11	\$25.69
New Jersey and eastern portion of Pennsylvania (principally) . .	2	D	18.75	16.36	19.36
Eastern shore of Virginia	3	A	21.29	17.85	23.89
Central Maryland . .	3	B	16.34	13.34	16.45
North Carolina . .	4	C	15.66	12.81	18.02
South Carolina . .	5		14.50	12.59	17.44
Georgia	6		16.68	13.43	18.55
Mississippi and Louisiana (East of Mississippi River	8	C	19.64	16.71	21.41
Indiana	10	D	22.27	20.77	24.21
Weighted Averaged ^d			\$16.56	\$13.98	\$18.68

^aReproduced from O'Donnell, op. cit., p. 309.

^bAfter rebates, special discounts, etc.

^cQuoted consumer's delivered-to-the-farm price less actual agents' compensation and actual average transportation.

^dThe averages given are "weighted" according to the tonnage consumption of the different territories.

Note: Consumer's delivered-to-the-farm price for any given producer would be actual price F. O. B. plant as given in table above, plus his average freight (\$2.39 a ton), average trucking from the railroad station to the farm (\$0.74 a ton), and the commission he allows the agent (\$1.56 a ton).

A superficial examination of these statistics would indicate that the farmer paid 14.3 per cent more for his fertilizer in the first half of 1934, the first big consuming season under

TABLE 81

INDEX NUMBERS OF PRICES PAID BY FARMERS FOR FERTILIZERS
1929-1937
(1910-1914 = 100)

Year	March 15	June 15	Sept. 15	Dec. 15	Average
1929	132	132	129	129	130
1930	126	126	125	125	126
1931	119	119	110	110	115
1932	103	103	96	96	99
1933	91	91	99	102	96
1934	104	104	105	105	104
1935	106	106	99	99	102
1936	95	95	96	96	96
1937	102	102	102	102	102

^aU. S. Department of Agriculture, "Index Numbers of Prices Paid by Farmers for Commodities, 1910-1935," pp. 4-12, (mimeographed), and monthly releases of farm prices (mimeographed).

the code, as compared with the corresponding period of 1933 which was before the code began to operate.

However, by applying the difference between the quoted price and the realized price, \$16.56 and \$13.98, respectively, to the index of prices paid by farmers for fertilizer during the first half of 1933, the adjusted index stood at 77 as compared with the reported figure of 91. Since the figures quoted for the codal period were probably "true" and adhered to because of the possibility of suffering penalty under the code, the actual increase in the price paid by the farmer in the first half of 1934 as compared with the first half of 1933 was over 35 per cent (77 to 104) or more than the 34 per cent gain in the actual net cash (dealer) price received by the manufacturer at the plant as disclosed in Table 79. This, then, shows that practically all the advance in price went to the manufacturer who paid out part in the 14 per cent increase in costs.

This analysis serves to throw light on the use of unadjusted statistics. An example of this is the testimony of

Charles J. Brand, representing The National Fertilizer Association before the Senate Finance Committee hearings on the Investigation of the National Recovery Administration. Regarding the price of fertilizer, Senator King asked, "It has gone up over 40 per cent, hasn't it?" Mr. Brand replied:

No; comparing the last preCodal year with the codal year of 1934, it has gone up approximately 34 per cent. That is, the wholesale price has gone up, the price to the farmer has gone up approximately 15 per cent The Department of Agriculture recently carried out a survey which showed that the increased price to the farmer had been approximately 15 per cent, whereas the increase to the manufacturer has been 34 per cent, the reason being the elimination of intermediate profits due to the more circuitous handling through dealers.¹

The increase in the price of fertilizer is explained, in part, in Table 79. This table shows that the increase in costs at the plant accounted for \$2.18 a ton of the \$4.70 a ton increase in the actual net cash (dealer) price received by the manufacturer at the plant. Materials, accounting for over 60 per cent of the total cost, increased by 13 per cent from the spring season of 1933 to March 1, 1934 and this advance was responsible for 57 per cent of the total increase in cost. Although the cost of labor increased by over 50 per cent during this period, it comprised only about 5 per cent of the total cost and was responsible for about 15 per cent of the increase in total cost. The cost of bags also increased by over 50 per cent during this period and contributed 20 per cent of the increase in total cost. "Other" costs, which comprise about one-fourth of total costs, increased nominally and were responsible for but a small part of the increase in cost.

The increase of 13 per cent in the price of materials

¹U. S. Congress, Senate, Testimony Relating to the Code of Fair Competition for the Fertilizer Industry, Hearing before Committee on Finance, U. S. Senate, 74th Congress, 1st Session, on Senate Resolution 79, (Washington: Government Printing Office, 1935), pp. 1734-5.

(based on the industry's cost accounting system) is almost exactly the same as the advance in the BLS index of wholesale prices of fertilizer materials which rose 12.3 per cent, as seen in Table 82.

TABLE 82
INDEX OF WHOLESALE PRICES OF FERTILIZER MATERIALS^a
(1926 = 100)

Period	Index	Period	Index
1926.	100.0	1933.	65.9
1927.	96.2	March	61.9
1928.	94.6	1934.	67.1
1929.	92.1	March	69.5
1930.	85.6	1935.	66.3
1931.	96.8	1936.	65.9
1932.	66.9	1937.	71.2

^aU. S. Department of Labor, Bureau of Labor Statistics, "Wholesale Prices," December, 1937, (Washington: Government Printing Office, 1937), p. 3.

In view of the fact that the production of superphosphate was the one raw material covered by the fertilizer industry code, it is of interest to note that from March, 1933 to March, 1934, this product increased from 39.1 cents to 46.9 cents per unit of phosphoric acid, an advance of 19.9 per cent as compared with the gain of 13 per cent for all materials.

From these data it would seem that the price paid by the farmer increased over 35 per cent in the first busy season of codal operation as compared with the corresponding period of the preceding year while the actual net cash received by the manufacturer at the plant increased by about 34 per cent although his costs increased only 14 per cent. Thus it seems clear that the trade practice provisions of the code were sufficiently important to the industry to allow it to turn operating losses in 1933 into operating profits in 1934.

The index of prices paid by the farmer advanced to 106

per cent in March, 1935 as compared with 104 in March, 1934 while in the same period the index of wholesale prices of fertilizer materials rose from 61.9 to 69.5. Following the invalidation of the code, however, the price paid index dropped to 99 by September and averaged only 102 for the year 1935. Trade Journal writings indicate that price cutting had again set in and so the index of prices paid which stood at 96 in the calendar year 1936 is probably not a true measure of the extent of the drop following the invalidation of the code. If we could assume that the quoted price in 1936 bore the same relationship to the realized price as was true in the spring season of 1933 the comparable index for 1936 would have been 80, indicating a 25 per cent cut in prices. While this illustration probably exaggerates¹ the true picture of what actually took place, it does indicate that the industry had probably lost a substantial part of the codal benefits of its open price filing system.

The Industry

The previous two sections of this chapter have indicated how the manufacturers of fertilizer were able to recoup, during the NRA episode, substantially more than the increase in their costs with the result that the gains over costs resulted in increased earnings.

The statistics by which the changes in earnings for the industry as a whole would customarily be recorded are the tabulations of the figures from the income tax reports made to the United States Treasury Department and appearing in the annual publication called "Statistics of Income." Complete details of

¹The Robinson-Patman Act of June 19, 1936 tended to close somewhat the gap between quoted and settlement prices.

the income statistics on the fertilizer industry have never been included in "Statistics of Income" but for the purposes of this dissertation a special tabulation of this material was made and is presented in Tables 42-47.¹ Although these data have certain unavoidable deficiencies, which will be indicated below, these tables show that the fertilizer industry, after losing an annual average of \$7,350,000 in the three years preceding the adoption of the code, showed a profit of \$1,263,000 in 1934, the first year of codal operation, and \$3,776,000 in 1935, the busy season of which operated under the code. Whereas an average of only 87 corporations reported "net income" in the years 1931-1933, 194 corporations reported "net income" in 1934 and 192 did likewise in 1935. As is inevitable in an industry in which only a small amount of capital is required to enter the industry, increasing profitability brought many new firms into the industry. Whereas in 1933 only 275 fertilizer corporations reported to the United States Treasury Department, this number was increased to 362 in 1934 and 387 in 1935. We have no way of knowing whether or not some of the newer corporations were able to realize their expectations and enter the list of corporations reporting "net income."

While these data are invaluable for comparing the financial policies of the "net income" corporations with those of the "no net income" corporations, such as the analysis presented in Chapter IV, an analysis, such as this study of the NRA episode, cannot be exact on the basis of these data. This is due to the fact that the "Statistics of Income" figures, as published, have certain deficiencies. The primary deficiency for the purpose of this study is that fiscal year returns are tabulated with the preceding year's calendar year corporation returns if the fiscal

¹See chap. iv, supra.

year ends on or before June 30. Since this type of fiscal year returns constitute a substantial proportion of the total for the fertilizer industry and because the spring is the busy season in the fertilizer industry it is readily seen that returns tabulated in "Statistics of Income" will combine different busy seasons for different corporations. Thus the "Statistics of Income" published for the year 1933 will, for example, include the spring season of 1933 for calendar-year corporations and all or part of the spring season of 1934 for many fiscal-year corporations whose fiscal year ends before June 30, 1934.

In order to avoid this overlapping and to obtain a true comparison of the codal period with pre-codal figures, one would ordinarily obtain financial data for a group of companies out of published sources for analysis. This is impossible in the fertilizer industry because only a few of the larger companies make such reports public. Recourse to income-tax records filed with the United States Treasury Department is essential for the purpose, especially if we wish to analyze the relative changes in earnings of corporations of different sizes.

It is impossible to have access to the actual returns filed by the corporations since the older returns which have been audited and the cases closed are destroyed and the current returns are scattered in the various Internal Revenue offices throughout the country while being audited and investigated.

This inaccessibility of the actual returns was overcome by resorting to a special tabulation of transcript cards of the essential data transcribed from the income-tax returns filed by each corporation by the United States Treasury Department for record purposes. These transcript cards are not made out for all corporations nor necessarily for the same corporations every year.

Corporations for which transcript cards are made are selected in order of the amount of total assets, beginning with the largest and enough corporations are included to cover some 80 per cent of the total assets of the industry. The practical result of this procedure is that it is not possible to obtain a sample of the smaller corporations in any study where the corporations are classified by size.

For the purpose of this analysis there was selected a very representative sample of six large corporations and five medium-sized corporations for which transcript cards were available.¹ Such a sample presents a further uniqueness in approach since it then became possible not only to regroup the statistics according to the same spring season but also to compare the financial results for a fixed group of corporations throughout the NRA episode.

The sample of the six large corporations represented about 40 per cent of the money value of the industry's sales and 50 per cent of the industry's assets in the period 1930-1935, inclusive, and the sample of five medium-sized corporations represented about 8 per cent each of sales and assets of the industry during this same period.²

Comparability of selling seasons in these groups was obtained by combining, throughout the period, returns filed in one year covering a particular selling season with returns filed in

¹It is contrary to the policy of the United States Treasury Department to disclose the names of the individual companies. The large companies each had sales in excess of \$5,000,000 and the medium-sized companies averaged sales of \$2,100,000 for the years 1929-1936, inclusive, \$600,000 being the lowest sales for any of the medium-sized companies in any year studied.

²These ratios were obtained by totaling the sales and total assets of each group, large and medium, and comparing these totals to the corresponding totals of the whole industry as shown in Table 45.

the next year covering the same selling season. The relative importance of the fiscal-year corporations is illustrated by indicating the regroupings necessary to obtain comparable data. For example, under the 1933 selling season three 1933 returns and three 1932 returns are combined in the large group, while the medium group is made up of three 1933 returns and two 1932 returns. The financial history of the industry, as typified by this group of corporations, can be briefly related by an examination of the trend of sales and of net income as reported to the United States Treasury Department. These data are tabulated in Table 83 together with indices of these data which allow easier comparison.

This table shows the sharp reduction in the dollar value of sales that took place since 1930, culminating in 1932 and 1933. It will be seen that the sales of the large corporations underwent the sharper decline as compared with the sales of the smaller companies. In the first season of selling after the NRA code went into effect, namely 1934, both groups enjoyed sizable advances in sales of about the same magnitude. However, in 1935 the large corporations continued to register gains in sales, and this continued through into the 1936 selling season. On the other hand, the medium-sized corporations lost about 6 per cent of their dollar sales volume in 1935 although in 1936 the sales had more than recovered this loss and stood slightly above the 1934 level.

How the increases in sales of these two groups were translated into earnings available for distribution to stockholders or to replete treasuries which suffered during the depression years is shown in columns (2) and (4) of Table 83.

The six large corporations showed a very large gain in net income after taxes from 1933, the last pre-codal year, to 1934, the first year of codal operation. This increase continued

TABLE 83

SALES AND NET INCOME OF SELECTED FERTILIZER COMPANIES^a
1929-1936

Selling Season	Six Big Corporations		Five Medium-Sized Corporations	
	Sales Less Returns and Allowances (1)	Net Income After Tax (2)	Sales Less Returns and Allowances (3)	Net Income After Tax (4)
1929	\$85,442,363	b	\$13,198,649	b
1930	87,742,889	\$5,127,758	13,487,167	b
1931	64,581,896	- 1,242,948	10,744,997	\$530,110
1932	37,999,436	- 2,663,685	11,482,170	- 865,279
1933	38,171,028	54,031	11,620,995	357,966
1934	44,978,708	2,911,472	14,125,006	760,990
1935	48,424,951	4,049,060	13,279,425	- 235,813
1936	51,398,064	1,716,674	14,253,969	978,903

Index (1934 = 100)				
1929	190	b	94	b
1930	195	176	95	b
1931	144	- 43	76	70
1932	84	- 91	81	-114
1933	85	2	82	47
1934	100	100	100	100
1935	108	139	94	- 31
1936	114	59	101	129

^aSpecial tabulation of selected data in the transcript cards compiled from income-tax returns filed with the U. S. Treasury Department.

^bNot available for all companies.

into 1935 selling season which was also covered by the code. However, in 1936 the index of net income after taxes fell sharply to 59 from 139 in 1935.

The five medium-sized corporations, which had suffered their worst year in 1932, as did the large corporations, a little more than doubled their net income after taxes in the first year of codal operation as compared with 1933. They, however, underwent a sharp reversal in 1935 -- much more abrupt than the decline in sales -- to suffer a loss as a group. However, in 1936 the index of net income after taxes increased from -31 to 129 (1934

equals 100).

These income data seem to indicate that during the period of codal operation the big corporations improved their earnings to a much greater extent than did the medium-sized corporations and in the first year following the invalidation of the code, this situation was reversed and the medium-sized corporations greatly improved their position while the big corporations' earnings suffered a drastic curtailment.

The sales data also present a significant story. Although the big corporations steadily increased the dollar volume of their sales from 1932 through 1936 the volume in 1936 was only 59 per cent of the sales in 1930. On the other hand the medium-sized companies although not increasing the relative dollar value of their sales from 1932 to 1936 by as large a percentage as did the big corporations had nevertheless during the period in which the code operated and in 1936 averaged 103 per cent more business than in 1930 which was the year of peak tonnage for the entire industry.

This relative curtailment of earnings on the part of the big corporations as contrasted with those of the small corporations in the first year after the invalidation of the code could not have been attributable to a decline in dollar sales which increased during this interval. Although the data is not sufficient upon which to predicate a dogmatic conclusion, it is at least suggested by these figures that from a net earnings point of view the NRA code was of relatively more value to the big than to the medium-sized companies.

As has been indicated in previous chapters, the members of the fertilizer industry thought very highly of the fertilizer code. It gave them an opportunity to make effective with the

force of law, trade practice provisions which the industry had long wanted, and which, prior to the NRA, could not be made effective over a sustained period of time. The industry's appraisal of the code was well expressed in the following quotation:

Calling N.R.A. codes 'almost as important as the Code Napoleon,' Charles J. Brand, executive director of the Fertilizer Code Authority, said he could not 'conceive that American industry and government would scrap the vast amount of constructive effort they represent.'

He likewise attributed the rise in profits last year in that industry to the code system. Although there was a trade practice code in the industry since 1927, 'the N.R.A. gave us something we didn't have before: a degree of opportunity to see that the code was enforced.' If this is not continued, he said, the government will have to step in and run the industry.¹

Throughout the operation of the National Industrial Recovery Act, the executives of the fertilizer industry were among the leaders in defending the principles of the NRA codes. Mr. Brand not only appeared before the general conference on open price filing practices and pleaded for the retention of the open price filing plan with a ten-day waiting period but also was one of the more prominent witnesses before the Senate Finance Committee when it was considering the renewal of the NRA.

One of the best indications of the high regard in which the fertilizer industry held its NRA code is seen in their consistent efforts since the invalidation of the NRA to have the Federal Trade Commission approve a trade practice code which would contain certain provisions somewhat similar to those which were contained in the NRA code.

The principal provision sought by the industry is an open price filing provision which would permit the industry to have the

¹Testimony of Charles J. Brand, Executive Secretary and Treasurer, The National Fertilizer Association, and Executive Director, Code Authority for the Fertilizer Industry, "Public Hearing on Price Differentials," March 14, 1935, Press Memorandum No. 8, third day, Release 10466, p. 4.

privilege of "disseminating to each other, to the trade, and the purchasing public, so far as proper under the law, price lists and other statistical information regarding past and completed transactions." The fertilizer industry feels that the success of their plan is particularly dependent upon these price lists and although the Commission is willing to permit the dissemination of statistical information regarding past and completed transactions so far as proper under the law, they have not yet, after some three years of consideration, been willing to permit the industry the privilege of distributing the price lists as requested.

Summary

In summarizing it might be desirable to review the data which have been developed in this study as to how competitive an industry the fertilizer industry really is and how important a factor the small corporation is in this situation.

For more than thirty years prior to the NRA fertilizer industry code there were a succession of trade practice codes which with varying degrees of success and for varying periods of time attempted to regulate the trade practices in this industry.¹

The whole philosophy of the industry in setting up and in administering these codes seems to have been to keep prices up or to put them higher. The philosophy of the industry as expressed by the type of code provisions adopted seems to evidence the belief that further reduction of unit costs because of any increased volume of production which might be caused by lower prices would result in lower percentage of net profits on the capital invested.

In considering the relative advantages of the different

¹Chap. v, supra.

types and sizes of plants of manufacturers it must be realized that the technical processes of the industry are well known¹ and that most of the workers in the fertilizer factories require only a short training period.² Different plants are mechanized in varying degrees depending upon their financing, their location which affects labor costs and on their production requirements. No evidence is available that one type of plant can deliver fertilizer at the farm in the average case at a lower cost than another.

Since some 50,000 dealers and agents each sell many different brands of fertilizer,³ there is less chance for this portion of the business to be monopolistic than in some other lines of industry.

Furthermore with publicity and analysis work on composition of fertilizers which is done by the United States Department of Agriculture and by state experiment stations for the farmers, it is becoming increasingly difficult for any fertilizer manufacturer to achieve a monopoly by utilizing a brand name and attributing special merit to that particular product.

While diversification of credit risks and of sales help a big firm to stabilize its business, this very diversification may put the big firm at a disadvantage as compared with a particular small competitor whose plant is in a good sales area and who has taken fewer than average poor credit risks in a particular year.

In purchasing raw materials under ordinary conditions, there is no evidence that the small mixed fertilizer manufacturer is relatively at a greater disadvantage as compared to the large

¹Chap. 1, supra.

²Chap. 11, supra.

³Chap. 111, supra.

producer than is the case in most other industries. That there are probably economies in large scale purchasing is indicated by the formation of such groups as The Independent Fertilizer Manufacturers' Association primarily for the purpose of purchasing fertilizer materials on a quantity basis.¹

Except for superphosphate, fertilizer raw materials were not covered by the NRA fertilizer industry code and this study does not purport to study them in any great detail. Many books and reports are readily available dealing with these subjects.

Although certain by-products of the packing industry are sources of organic nitrogen for fertilizer manufacture, it is generally true that the fertilizer manufacturer is essentially a purchaser of his nitrogen and potash requirements. These products are principally manufactured by chemical companies. There are no tariffs on fertilizer materials and especially in the case of nitrogen production there are many alternative sources of supply as various nations have developed processes for the artificial fixation of nitrogen from the air in connection with their programs of national self-sufficiency and national defense. The fertilizer industry is the principal consumer of chemical nitrogen products in the United States.² The first evidence of intercorporate financial relationships between producers of chemical nitrogen and a fertilizer manufacturer has recently come to light. In filing its application for the registration of its securities on a registered exchange with the United States Securities and Exchange Commission, the Allied Chemical and Dye Corporation, one of the largest producers of chemical nitrogen, disclosed that it had acquired substantial control of the Virginia-Carolina Chemical Corporation, one of the larger fertilizer manufacturers.

¹Chap. vi, supra, p. 170.

²Chap. i, supra, p. 4.

Prior to the World War the United States was importing practically all of its potash requirements from Germany which had great natural deposits of these salts. Germany had a virtual natural monopoly and controlled prices and production through the operation of cartels. Today because of the discovery of great potash deposits in New Mexico, the companies operating in the United States could in an emergency supply the entire requirements of the domestic fertilizer industry for potash salts. There is no evidence of intercorporate relationships between potash producers and fertilizer manufacturers nor any reason to believe that the larger manufacturers have any special advantage in buying this raw material other than might exist with quantity purchases in any line of industry.

It has been noted that many fertilizer manufacturers manufacture their own superphosphate and about a dozen of the large fertilizer manufacturers are said to be the largest producers of phosphate rock which is one of the raw materials from which superphosphate is made.¹ As has been indicated,² these large companies are not necessarily the lowest cost producers of superphosphate nor is there reason to believe that it was a highly profitable branch of the industry prior to the NRA code when the price controls over superphosphate were such that it advanced in price far more than did other fertilizer materials.³

The tabulations of financial reports filed with the United States Treasury Department show that in general the average assets of corporations reporting "net income" is usually smaller than

¹United States Tariff Commission, Crude Phosphates and Superphosphate, Report No. 100, Second Series, 1935 (Washington: Government Printing Office, 1935), p. 11.

²Chap. 1, supra, pp. 8-9.

³Chap. ix, supra, p. 310.

for corporations reporting "no net income" thus indicating that on the average the smaller corporation is relatively the more profitable.¹ Thus it seems that the larger corporations do not have all of the advantages.

It is true that it does not require much capital and it is, therefore, easy to enter the mixed fertilizer business. However, during the operation of the NRA code, the Code Authority set up producer qualification requirements which made it difficult to qualify as a producer.² Trade association executives frequently point to the small capital requirements as evidence that the industry is highly competitive because of this type of potential competition if prices get too high. Such competition could not be tremendously important unless its volume were substantial or unless it were able to upset the price structure.

The facts seem to be that the bulk of the sales of the industry are concentrated in relatively few hands. A court case in 1926 brought out the fact that from January 1, 1924 to May 1, 1926 with more than 600 fertilizer companies operating in the United States, six companies manufactured about 80 per cent of the fertilizer sold in the country.³ It cannot be ascertained just what the concentration of control is at the present time as the large corporations have jealously guarded both their tonnage figures and the dollar value of their sales. It is at least possible that this policy was adopted to deliberately conceal this concentration of control. In a conference with the executive secretary of The National Fertilizer Association on October 25, 1935, the author was shown but not permitted to read a carbon copy

¹Chap. iv, supra, p. 102.

²Chap. viii, supra, p. 228.

³Information filed in the case of The American Agricultural Chemical Company, et al., in the District Court for the District of Maryland.

of a confidential letter addressed to the National Recovery Administration which contained these tonnage figures in connection with establishing the representativeness of the membership of the Code Authority. A thorough search of the NRA fertilizer industry files failed to disclose the original of this letter. If the concentration of control still exists as we must conclude that it does without evidence to the contrary the sales of the small firms cannot be very much of a factor unless from a price angle.

We have no evidence that very small firms can produce mixed fertilizer at a lower cost than large firms even though the very large firms may not make as good a financial showing as somewhat smaller firms. However, price leadership by the larger companies seems well established as a practice in the industry. The Federal Trade Commission found that it existed in 1922¹ and the study of the open price filing records during the period of the NRA code indicates that the practice still existed at that time.²

Under these conditions the small firms are usually followers and not leaders in setting prices. If, because of lack of knowledge of costs or because of unwillingness or inability to carry inventory past a selling season, a firm large or small offers to sell its products at a lower price than the level at which most firms are selling, the losses to the bigger firms come about principally where the fertilizer has been sold with a guarantee against price decline. In some instances these guarantees are alleged to have involved settlement or refunds at the lowest price at which competitors have offered to sell the customer the same grade of fertilizer during the season. Under such conditions small producers might upset the price structure although, because

¹Chap. iii, supra, p. 133.

²Chap. viii, supra, pp. 271 ff.

of the small tonnage which could be offered by small producers, it does not seem that the offers would be made to many consumers. Furthermore, consumers who had already made their purchases from large producers would not seem to be the market most likely to be approached since they would already have their supply of fertilizer for the season.

The Federal Trade Commission found that the smaller firms sought business by utilizing a price differential.¹ It is not quite clear how this situation could have prevailed if the larger companies were at the same time supposed to have guaranteed against price decline and met the price competition of the small producer. It is possible that this policy of retroactive price adjustments to meet cut prices has cost the larger companies money but probably not as much as one would be led to believe by all of the talk about it.

Once the NRA fertilizer industry code became effective, it is difficult to see how the small concerns could have been much of a competitive factor. Price leadership continued, retroactive price adjustments were abandoned and the small volume companies were a minor factor in the situation. Under the operation of the NRA code the larger firms seemed to have benefited more than the smaller firms² although the industry as a whole was better off financially since they were able to move a larger volume of fertilizer in spite of the higher price.³

Under the open price filing system every producer had to send a copy of his open price schedule to every competitor. The establishment of the zones and subzones was helpful in saving the

¹Chap. 111, supra, p. 133. ²Chap. ix, supra, pp. 315 ff.

³Chap. iv, supra, pp. 103 ff.

small companies from some of the expense attached to sending out so many price schedules. Furthermore, by establishing subzones, the delivered to the farm prices more correctly represented actual cost, i. e., there was less artificial absorption of freight charges.

The delivered to the farm basis of quoting prices did permit an exact comparison of terms of sale. To the extent that it was quoted for a zone or subzone it discriminated against the consumer who was located near the plant since the quoted price included average delivery cost throughout the zone. On the contrary the farmer furthest from the plant benefited as the freight charged was less than he would otherwise have had to pay.

All in all the price filing rulings worked a hardship on small producers. The schedule was costly to prepare and the requirement that it must be distributed to competitors made it an expensive proposition. The fact that the Code Authority saw fit to require a complete new schedule each time any change was made in an existing schedule certainly tended to discourage price changes. If the cost of preparing and distributing the open price schedules had been paid by the Code Authority there would probably have been many more price changes than actually were made. Furthermore, the price filing regulations tended to restrict geographical competition since fertilizer could not be offered for sale in any particular zone or subzone unless the open price schedule had been filed and distributed to competitors in that area. The expense attached to such procedure tended to restrict the number of zones in which any particular producer competed for business.

The fact that schedules filed to meet competition had to be exactly the same as the one whose competition they were meeting

tended toward uniformity in terms of sale.¹

While the NRA discouraged waiting periods in codes because it was feared that the period might be used to coerce price cutters before the effective date of the new price, no evidence is available that this was practiced in this code.² The ten-day waiting period contributed to price rigidity in a much more important particular. The fertilizer selling season is a short one and the principal incentive of cutting prices is to steal a march on a competitor and move a substantial quantity of fertilizer before the competitor finds out about it. Under the open price filing system there was no incentive for such price cutting since the cutter had to wait ten days before he could sell at the changed price and had to notify his competitor as to what he was about to do. Furthermore, the competitor could sell at the same terms at the same time if he filed a schedule to meet the competition prior to 48 hours before the effective date of the schedule whose competition he was meeting.

With price leadership, filing of duplicate terms of sale schedules to meet competition and the expense of changing schedules when once filed led to more price rigidity than would normally have been the case. The whole philosophy back of the administration of the code seems to have been to keep prices up in order to make a profit. The recession in prices immediately following the abandonment of the code gives a rough indication of the extent of the increase in prices due to the code.³ As measured by increased profits, the larger companies seemed to have received the greatest relative benefits from the code from this price policy.⁴

¹Chap. viii, supra, p. 272.

²Chap. viii, supra, pp. 276 f.

³Chap. ix, supra, p. 311.

⁴Chap. ix, supra, pp. 316 f.

The increased prices for fertilizer during the codal period had to be paid by the farmer. Whether or not the farmers benefited by the so-called entire New Deal program is not a subject for this thesis. The Agricultural Adjustment Administration subsidies to farmers probably helped some farmers to purchase fertilizer. The curtailment of acreage was encouraging to the use of fertilizer in order to produce more crops on each cultivated acre. On the other hand the curtailment of cotton acreage was so great as to reduce both the absolute and relative amount of fertilizer used on cotton during this period, not to mention what the long-run effect of encouraging foreign production of cotton may have on the long-run future of the prospects for cotton in the South.

The history of the industry indicates that the leaders of the industry have repeatedly experimented with codes designed principally to experiment with devices to control the price of fertilizer. Under the NRA where the codes had the force of law, the fertilizer industry had its best chance to make effective such code provisions.

Codes seem to have worked best from the fertilizer manufacturers' point of view in years when the fertilizer demand would have been large in any event. Thus we have the situation in this industry of having the volume of fertilizer sold frequently increase in spite of increases in the price of fertilizer in years following years of good farm income.¹

Such decreases in prices as have taken place in recent years has been due not so much to improvements in methods of production or distribution of fertilizer but rather to reductions in the cost of the raw materials, resulting from their increased world output as nations sought to obtain national self-sufficiency

¹Chap. 111, supra, p. 67.

with reference to fertilizer materials.

The financial record shows that over a period of years the fertilizer industry has earned but small returns on the invested capital measured by any standard.¹ Furthermore, each of the large fertilizer manufacturing companies whose securities are traded in on the New York Stock Exchange have been in financial difficulties at one time or another. However, the record shows that the financial leadership in this industry has not adopted the policies most likely to yield profits.²

This same leadership, as has been pointed out, has chosen to attack the problems of the industry through codes which contain devices for price regulation. The NRA gave the industry a long awaited opportunity to experiment with these control devices which had the force of law and in return agreed to certain provisions with reference to labor which were incorporated into the code.

As has been set forth earlier in this analysis, we do not have statistical data earlier than 1932³ with reference to the number of man hours worked in the fertilizer industry. The low base year of 1932 is used for comparative purposes because of the lack of data. Hence, the comparisons of code and post-code wages, hours and employment are merely intended to be relative one with the other. It is not possible to allocate to the operation of the code any definite percentage of the change in wages, hours and employment.

In summing up, it seems that during the NRA episode the code for the fertilizer industry did have an effect in increasing

¹Chap. 1v, supra, p. 123.

²Chap. 1v, supra.

³In 1932 the BLS changed its form of questionnaire.

employment and raising purchasing power in the fertilizer industry. Prices to the consumer seem to have increased more than costs indicating that the trade practice provisions in the code may have been important factors in this situation which resulted in larger profits to the manufacturers and particularly to the larger ones.

Since the volume of business increased in each year of codal operation over the volume in the preceding year, the code never had a real test of compliance in a period of declining business. Increased competition for the business when demand was reduced had been the principal factor causing the increase in unfair trade practices and the abandonment of previous codes. Even with the increased demand for fertilizer during the NRA episode, there is some evidence that the compliance situation was becoming progressively worse the longer the code operated.

This study has certainly demonstrated that no conclusive judgment can be made on many of the matters relating to the effect of the code because of the inadequacies and deficiencies of the available statistics. While it is true that wage rates have not yet receded to the low levels of the depression and pre-codal era that phenomenon may at least in part have been due to other causes. It does not seem that the NRA fertilizer industry code has had any fundamental and permanent effect upon the industry

